

# DLLRF controller for superconducting third harmonic cavity by developed at SSRF

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The superconducting third harmonic cavity which has developed in Shanghai Synchrotron Radiation Facility (SSRF) has passed tests. A digital low level radio frequency (DLLRF) controller has been developed and achieved the goal of stretching beam cluster and improving beam life. The controller based on a Field-Programmable Gate Array (FPGA) board and a front-end board which adjust the stepper motor and piezoelectric ceramic. When the state is in top-up mode over 120mA, the amplitude stability has improved from  $\pm 5\%$  with open loop to less than  $\pm 1\%$  with close loop, the voltage of piezo has varies smoothly and stably within 120V, and the beam life has improved more than doubled.

## Keyword

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